Relation between Analgesic Effect of Drags and Chemical Structures

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cyanocobalamin. The following facts were observed. The content of cyanocobalamin increased in the bacterial cells at their growing stage and was excreted into the media when autolysis began to take place. The autolysed cells, however, was found to contain still much Co^{60}. This Co^{60} was designated to be inorganic by means of chemical method.

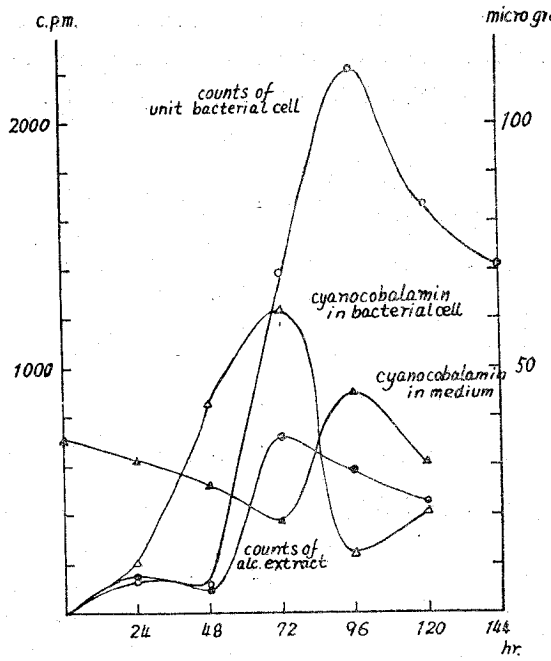

Fig. 2. Amounts of cyanocobalamin (in 250 ml. medium).

18. Relation between Analgesic Effect of Drugs and Chemical Structures

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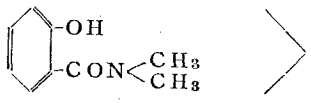
In the previous report it was mentioned that $(CH_3)_2$ N-radical on the side chain seemed to play more important role than $(C_2H_5)_2$ N-radical in potentiating the analgesic action of morphine (This Bulletin, 36-49, 25, 1951).

This experiment was carried out in order to estimate the analgesic action of various drugs using Haffner's method in mice and Hardy's radiant heat method in man.

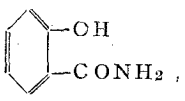
Analgesic actions of N-dimethylsalicylamide (I), N-dimethylphenetidine (II), dimethylaminoacetophenetidine (III), 4-dimethylaminoacetaminoantipyrine (IV), N-dimethylaminoethylphenothiazine (V), and dimethylaminoethyldiphenylglyco-

late (VI) showed stronger actions than N-monomethylsalicylamide (VII) or salicylamide (VIII), phenetidine (IX), phenacetin (X) or N-diethylaminoacetaminophenetidine (XI), 4-diethylaminoacetaminoantipyrine (XII), N-diethylaminoethylphenothiazine (XIII), and diethylaminoethyldiphenyl glycolate (XIV) respectively.

From these results, it was ascertained that derivatives which have $(CH_3)_2$ N-radical in the side chain exhibit very remarkable effect in analgesic activity as compared with those derivatives which have no NH_2-radical and with those which posses NH_2-, NHR- or $(C_2H_5)_2N$-radical.



(I)



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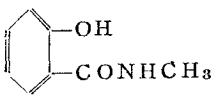

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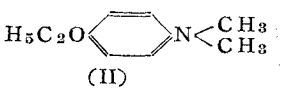

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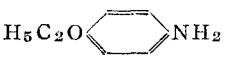

(IX)

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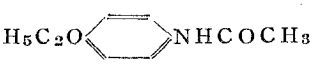

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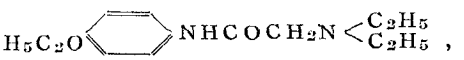

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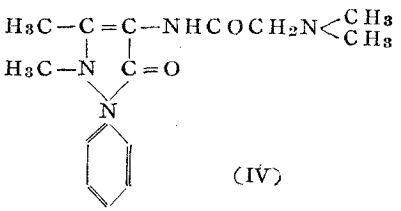

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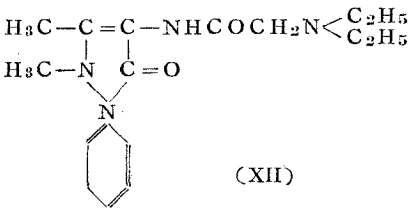

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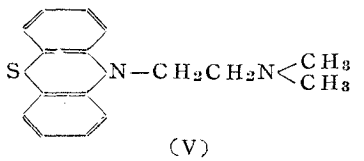

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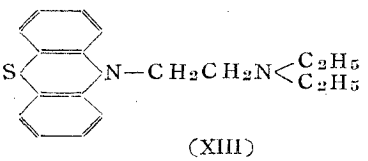

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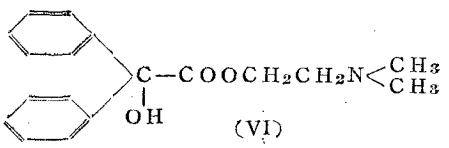

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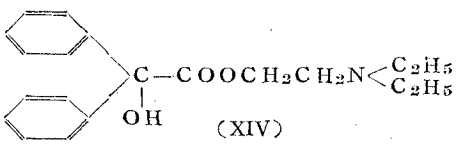

(XIV)